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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/168,770 10/08/98 SHAH

R TH-1042(US)

IM62/0329

DEL S CHRISTENSEN  
SHELL OIL COMPANY  
INTELLECTUAL PROPERTY  
P O BOX 2463  
HOUSTON TX 77252-2463

EXAMINER

VARCOE JR, F

ART UNIT

PAPER NUMBER

1764

DATE MAILED: 03/29/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
**09/168,770**

Applicant(s)

**Shah et al.**

Examiner

**Varcoe**

Group Art Unit

**1764**☒ Responsive to communication(s) filed on Mar 17, 2000☐ This action is **FINAL**.☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1035 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claim

☒ Claim(s) 1-12 is/are pending in the application.Of the above, claim(s) 8-12 is/are withdrawn from consideration☐ Claim(s) \_\_\_\_\_ is/are allowed.☒ Claim(s) 1-7 is/are rejected.☐ Claim(s) \_\_\_\_\_ is/are objected to.☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.☐ The specification is objected to by the Examiner.☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).☐ All ☐ Some\* ☒ None of the CERTIFIED copies of the priority documents have been☐ received.☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4☐ Interview Summary, PTO-413☒ Notice of Draftsperson's Patent Drawing Review, PTO-948☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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## **DETAILED ACTION**

### ***Election/Restriction***

1. Applicant's election with traverse of claims 1-7 in Paper No. 6 is acknowledged. The traversal is on the ground(s) that the claims of the method would only be infringed by a flameless combustor.. This is not found persuasive because the method claims read on a fired heater. To explain further, the steps of claim 8 are providing fuel, adding to the fuel, providing an oxidation reaction chamber, transporting a fuel mixture, and preheating the oxidant. There is nothing in these steps that prevents use of a fired burner.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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With regard to claim 1, in line 6, the term “oxidation chamber” lacks clear antecedent basis in the claims. It is suggested that it be named either “oxidation chamber “ or “oxidation reaction chamber” uniformly throughout the claims.

In claim 1, the paragraph including lines 8-12 is not clear. It appears that there is a temperature reference missing. It reads ...the preheater capable of increasing the temperature of the oxidant to a temperature resulting in the combined oxidant and fuel ... being greater than the autoignition temperature ....” It is not clear how fuel can be greater than a temperature.

In claim 1 line 14, “causes” seems unclear.

With regard to claim 2, line 2, the coke inhibitor is in communication with the fuel supply. What kind of communication is meant?

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
6. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minet et al. U.S. Patent No. 4,692,306 in view of Mikus U.S. Patent No. 5,255,742.

Minet discloses an oxidation reaction chamber (Minet Figure 1 (12)) having an inlet (42) for oxidant, an outlet for combustion products, and a flow path between the inlet and the outlet. Minet Figure 1. Minet discloses a fuel conduit (44) capable of transporting a fuel mixture to a plurality of fuel nozzles within the oxidation reaction chamber, each nozzle providing communication from within the fuel conduit to the oxidation chamber, with each nozzle along the flow path between the inlet and outlet. Minet Figure 1 (44).

The instant claim claims only the transportation capability, not the existence of a plurality of fuel nozzles. Nevertheless, the existence of such nozzles would have been obvious in light of Mikus Figure 1. Mikus discloses a plurality of fuel nozzles (Mikus Figure 1 (13)) in a burner flameless combustion heating apparatus.

Mikus and Minet are analogous art in that both deal with combusting a fluid fuel in order to heat another part of an apparatus.

It would have been obvious at the time of the invention to combine the apparatus of Minet with the multiple nozzles of Mikus.

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The motivation would have been to extend the region being heated by the heating unit. Further motivation would be to accomplish a nearly even temperature distribution within the apparatus. Mikus column 5 lines 46-47.

Minet fails expressly to disclose an oxidant preheater.

Mikus discloses a preheater in communication with the oxidation chamber inlet, the preheater capable of increasing the temperature of the oxidant. Mikus column 9 lines 39-55.

At the time of the invention, it would have been obvious to one skilled in the art to combine the modified apparatus of Minet with the preheater of Mikus.

The motivation would have been preheat the gas in order to bring about flameless combustion.

Minet discloses a process chamber in a heat exchange relationship with the oxidation reaction chamber. Minet Figure 1.

Thus it would have been obvious to modify the apparatus of Minet with the flameless combustion features of Mikus to get the invention of claim 1, thereby achieving more even heating in Minet's reactor apparatus..

With regard to claim 2, Mikus discloses a heater comprising a coke inhibitor injector system, the coke inhibitor system in communication with the fuel supply conduit. Mikus Figure 1 (10).

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It would have been obvious to combine the modified apparatus of Minet with the inhibitor system of Mikus.

The motivation would have been to prevent clogging of the fuel injection nozzles by coke formed as a result of heating the fuel prior to oxidation.

Thus it would have been obvious to modify the modified apparatus of Minet by adding the coke inhibition of Mikus to get the invention of claim 2.

With regard to claim 3, Minet discloses a fuel conduit is a tubular conduit essentially centrally located within the oxidation reaction chamber. Minet Figure 1 (41, 46).

With regard to claim 4, Minet discloses an oxidation chamber that is essentially centrally located within the process chamber. Minet Figure 1.

With regard to claims 5, 6, and 7, use of the chamber for olefin production, for steam methane reforming, or ethylbenzene dehydrogenation are intended uses only and do not confer patentability to the structure in an apparatus claim.

### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Varcoe, whose telephone number is (703) 306-5477. The examiner can normally be reached Monday through Friday from 9:00 am to 5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode, can be reached on (703) 308-4311.

The FAX telephone number for this Group Art Unit is (703) 305-3599 (for Official papers after Final), (703) 305-5408 (for other Official papers) and (703) 305-6357 (for Unofficial papers).

When filing a FAX in Group 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communications with the PTO that are not for entry into the file of the application. This will expedite processing your papers.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

  
MARIAN C. KNODE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700

RV  
March 24, 2000